

## Refine Search

### Search Results -

Terms	Documents
(fabric adj1 switch) same controller same (external or remote or outside)	8

Database:

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L1

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Set  
Name  
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Query

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Count

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Name  
 result set

DB=USPT,USOC; PLUR=YES; OP=OR

L1    (fabric adj1 switch) same controller same (external or remote or  
 outside)

8    L1

END OF SEARCH HISTORY

## Refine Search

### Search Results -

Terms	Documents
(fabric adj1 switch) same controller same (external or remote or outside)	8

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Query

Hit  
Count

Set  
Name  
result set

DB=USPT,USOC; PLUR=YES; OP=OR

L1

(fabric adj1 switch) same controller same (external or remote or  
outside)

8

L1

END OF SEARCH HISTORY

## Refine Search

### Search Results -

Terms	Documents
L1	0

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<u>Set</u> <u>Name</u> side by side	<u>Query</u>	<u>Hit</u> <u>Count</u>	<u>Set</u> <u>Name</u> result set
	DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR		
<u>L2</u>	L1	0	<u>L2</u>
	DB=USPT,USOC; PLUR=YES; OP=OR		
<u>L1</u>	(fabric adj1 switch) same controller same (external or remote or outside)	8	<u>L1</u>

END OF SEARCH HISTORY

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### Search Results -

Terms	Documents
(370/395.1  370/466  370/352  370/419  370/218  370/400  370/467  370/422  370/395.72  370/362  710/316  710/317  710/105  710/315  711/114  379/219).ccls.	6284

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Search:

L3

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### Search History

DATE: Wednesday, June 23, 2004   [Printable Copy](#)   [Create Case](#)

SetName Query

side by  
side

*DB=USPT,USOC; PLUR=YES; OP=OR*

L3 710/316,317,105,315;711/114;379/219;370/395.1,466,352,419,218,400,467,422,395.72,362.ccls.

*DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR*

L2 L1

*DB=USPT,USOC; PLUR=YES; OP=OR*

L1 (fabric adj1 switch) same controller same (external or remote or outside)

END OF SEARCH HISTORY

## Refine Search

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### Search Results -

Terms	Documents
L1 and L3	2

Database:

US Pre-Grant Publication Full-Text Database  
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 US OCR Full-Text Database  
 EPO Abstracts Database  
 JPO Abstracts Database  
 Derwent World Patents Index  
 IBM Technical Disclosure Bulletins

Search:

L4

Refine Search

Recall Text

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Interrupt

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### Search History

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DATE: Wednesday, June 23, 2004    [Printable Copy](#)    [Create Case](#)

SetName Query

side by

side

*DB=USPT,USOC; PLUR=YES; OP=OR*L4    l1 and L3L3    710/316,317,105,315;711/114;379/219;370/395.1,466,352,419,218,400,467,422,395.72,362.ccls.*DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR*L2    L1*DB=USPT,USOC; PLUR=YES; OP=OR*L1    (fabric adj1 switch) same controller same (external or remote or outside)

END OF SEARCH HISTORY

EAST - [Untitled1:1]

File View Edit Tools Window Help

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L1: (11) (fabric adj1 switch

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Highlight all hit terms initially

Default operator: OR

BRS I...

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	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition	Err
1	BRS	L1	11	(fabric adj1 switch) same control\$4 same (external	USPAT	2004/06/23 14:51			0

Start

Proxima SSO

EAST - [Untitled1:...

Start

Proxima SSO

EAST - [Untitled1:...

EAST - [Untitled1:1]

File View Edit Tools Window Help

Drafts

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Saved

Favorites

Tagged (0)

UDC

Queue

Trash

Search

DBs

USPAT

Default operator: OR

Plurals

Highlight all hit terms initially

(fabric adj1 switch)

same control\$4 same (external or remote or outside)

BRS I...

IS&R

Image

Text

HTML

	U	1	Document ID	Issue Date	Pages	Title	Current OR	Current XRef
1	<input type="checkbox"/>	<input type="checkbox"/>	US 6693901 B1	20040217	10	Backplane configuration without common switch fabric	370/362	370/364
2	<input type="checkbox"/>	<input type="checkbox"/>	US 6606690 B2	20030812	56	System and method for accessing a storage area	711/148	709/213; 709/218;
3	<input type="checkbox"/>	<input type="checkbox"/>	US 6546023 B1	20030408	11	Switch voice/data service extension to remote	370/468	
4	<input type="checkbox"/>	<input type="checkbox"/>	US 6542954 B1	20030401	14	Disk subsystem	710/316	710/315; 711/114
5	<input type="checkbox"/>	<input type="checkbox"/>	US 6445708 B1	20020903	11	ATM switch with VC priority buffers	370/397	
6	<input type="checkbox"/>	<input type="checkbox"/>	US 6438648 B1	20020820	12	System apparatus and method for managing multiple host	711/114	710/36; 711/170
7	<input type="checkbox"/>	<input type="checkbox"/>	US 6421711 B1	20020716	54	Virtual ports for data transferring of a data	709/213	710/36; 711/153
8	<input type="checkbox"/>	<input type="checkbox"/>	US 6327246 B1	20011204	15	Controlled available bit rate service in an ATM	370/232	370/412
9	<input type="checkbox"/>	<input type="checkbox"/>	US 5841773 A	19981124	8	ATM network switch with congestion level signaling	370/236.1	370/235; 370/395.71;
10	<input type="checkbox"/>	<input type="checkbox"/>	US 5436893 A	19950725	7	ATM cell switch suitable for multicast switching	370/392	370/395.3
11	<input type="checkbox"/>	<input type="checkbox"/>	US 4827104 A	19890502	9	Phototransistor relay electronic temperature	219/251	219/246; 374/132

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☐ Check to search within this result set

**Results Key:**
**JNL** = Journal or Magazine   **CNF** = Conference   **STD** = Standard

**1 High-extinction directional coupler switches by compensation and elimination methods**
*Hon-Ming Mak; Yanagawa, H.;*

Lightwave Technology, Journal of , Volume: 12 , Issue: 5 , May 1994

Pages:899 - 908

[\[Abstract\]](#)   [\[PDF Full-Text \(940 KB\)\]](#)   **IEEE JNL**
**2 COTS fibre channel network technology insertion into avionics systems**
*Gaska, T.D.;*

Aerospace and Electronics Conference, 1998. NAECON 1998. Proceedings of the IEEE 1998 National , 13-17 July 1998

Pages:120 - 127

[\[Abstract\]](#)   [\[PDF Full-Text \(812 KB\)\]](#)   **IEEE CNF**
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## High-extinction directional coupler switches by compensation and elimination methods

Hon-Ming Mak Yanagawa, H.

Opto-Technol. Lab., Furukawa Electr. Co. Ltd., Chiba, Japan;  
This paper appears in: **Lightwave Technology, Journal of**

Publication Date: May 1994

On page(s): 899 - 908

Volume: 12 , Issue: 5

ISSN: 0733-8724

Reference Cited: 24

CODEN: JTEDG

Inspec Accession Number: 4732888

### Abstract:

A conventional guided-wave optical directional coupler switch always presents extinction switching property less than 30 dB. One main reason is that coupling between input and output lead regions of the coupler, causing low extinction through switching state despite the coupling strength being very weak. Another may be due to the asymmetric structural designs of couplers in optical integrated circuits, making low extinction result in the cross switching state. In this paper, we propose two methods which can solve this crosstalk problem easily. One is by using a compensation technique in which we design an optimum structural construction for a reversal  $\Delta\beta$ -directional coupler switch, and for which theoretical prediction shows that infinity extinction can be achieved where the **fabricated switch** element gave 38 dB extinction ratio for both the through and cross switching states. In another method, the coupling effect between lead waveguides are eliminated by means of refractive index **control** of the waveguides. Theoretical prediction shows that if the change of refractive index  $\delta n$  is greater than  $3 \times 10^{-3}$ , over 60 dB extinction can result, where the **switch** element also gave more than 38 dB extinction in both the through and cross switching states. Fabrication error, existence of propagation loss, and stray light scattering may be the causes of difference between predicted and experimental results. However, both proposed methods show evidence that it is possible to obtain a high extinction ratio as high as nearly 40 dB.

### Index Terms:

directional couplers integrated optics optical communication equipment optical couplers

[fibres](#) [optical switches](#) [refractive index](#) [asymmetric structural designs](#) [compensation](#)  
[compensation technique](#) [coupling effect](#) [coupling strength](#) [cross switching state](#) [cro](#)  
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[coupler switch](#) [high-extinction directional coupler switches](#) [infinity extinction](#) [low-extin](#)  
[switching property](#) [optical integrating circuits](#) [optimum structural construction](#) [propag](#)  
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## Hit List

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**Search Results - Record(s) 1 through 8 of 8 returned.**☐ 1. Document ID: US 6606690 B2**Using default format because multiple data bases are involved.**

L1: Entry 1 of 8

File: USPT

Aug 12, 2003

US-PAT-NO: 6606690

DOCUMENT-IDENTIFIER: US 6606690 B2

TITLE: System and method for accessing a storage area network as network attached storage

DATE-ISSUED: August 12, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Padovano, Michael	Englishtown	NJ		

US-CL-CURRENT: 711/148; 709/213, 709/218, 709/220, 709/249, 711/170

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Abstract	Claims	KWIC	Draw De
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☐ 2. Document ID: US 6542954 B1

L1: Entry 2 of 8

File: USPT

Apr 1, 2003

US-PAT-NO: 6542954

DOCUMENT-IDENTIFIER: US 6542954 B1

TITLE: Disk subsystem

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Abstract	Claims	KWIC	Draw De
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☐ 3. Document ID: US 6445708 B1

L1: Entry 3 of 8

File: USPT

Sep 3, 2002

US-PAT-NO: 6445708

DOCUMENT-IDENTIFIER: US 6445708 B1

TITLE: ATM switch with VC priority buffers

h e b b g e e f e h b e f b e

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstracts	Abstracts	Claims	KWIC	Draw. De
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☐ 4. Document ID: US 6438648 B1

L1: Entry 4 of 8

File: USPT

Aug 20, 2002

US-PAT-NO: 6438648

DOCUMENT-IDENTIFIER: US 6438648 B1

TITLE: System apparatus and method for managing multiple host computer operating requirements in a data storage system

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstracts	Abstracts	Claims	KWIC	Draw. De
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☐ 5. Document ID: US 6421711 B1

L1: Entry 5 of 8

File: USPT

Jul 16, 2002

US-PAT-NO: 6421711

DOCUMENT-IDENTIFIER: US 6421711 B1

TITLE: Virtual ports for data transferring of a data storage system

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstracts	Abstracts	Claims	KWIC	Draw. De
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☐ 6. Document ID: US 6327246 B1

L1: Entry 6 of 8

File: USPT

Dec 4, 2001

US-PAT-NO: 6327246

DOCUMENT-IDENTIFIER: US 6327246 B1

TITLE: Controlled available bit rate service in an ATM switch

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstracts	Abstracts	Claims	KWIC	Draw. De
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☐ 7. Document ID: US 5841773 A

L1: Entry 7 of 8

File: USPT

Nov 24, 1998

US-PAT-NO: 5841773

DOCUMENT-IDENTIFIER: US 5841773 A

TITLE: ATM network switch with congestion level signaling for controlling cell buffers

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstracts	Abstracts	Claims	KWIC	Draw. De
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☐ 8. Document ID: US 5436893 A

L1: Entry 8 of 8

File: USPT

Jul 25, 1995

US-PAT-NO: 5436893

DOCUMENT-IDENTIFIER: US 5436893 A

TITLE: ATM cell switch suitable for multicast switching

Full	Title	Citation	Front	Review	Classification	Date	Reference	Generate OACS	Generate OACS	Claims	KWIC	Drawings
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Terms

Documents

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8

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L1: Entry 2 of 8

File: USPT

Apr 1, 2003

DOCUMENT-IDENTIFIER: US 6542954 B1

TITLE: Disk subsystem

Detailed Description Text (3):

In the external storage device shown in the figure, N disk array controllers (controller section) 1-1 to 1-N (controllers in middle such as 1-2 are not shown, this applies to hereinbelow) are connected to a host computer (not shown) in an upper side, and provide M disk drive interface (disk drive I/F) controllers 2-1 to 2-M in a bottom side. The hardware configuration of the disk array controller will be described below in greater details. Each of M controllers of fibre channel fabric switch 3-1 to 3-M are respectively connected to the disk drive interface (I/F) controllers 2-1 to 2-M for controlling disk drive units through their fibre channel interface 5. L disk drive units are connected to one fibre channel fabric switch controller, a total of M by L disk drive units (4(1,1) to 4(M,L)) are connected to the fibre channel fabric switch controllers 3-1 to 3-M through fibre channel interfaces 6.

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L1: Entry 2 of 8

File: USPT

Apr 1, 2003

US-PAT-NO: 6542954

DOCUMENT-IDENTIFIER: US 6542954 B1

TITLE: Disk subsystem

DATE-ISSUED: April 1, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Aruga; Kazuhisa	Odawara			JP

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Hitachi, Ltd.	Tokyo			JP	03

APPL-NO: 09/ 495868    [PALM]

DATE FILED: February 2, 2000

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	11-024648	February 2, 1999

INT-CL: [07] G06 F 13/16, G06 F 13/42

US-CL-ISSUED: 710/316; 710/315, 711/114

US-CL-CURRENT: 710/316; 710/315, 711/114

FIELD-OF-SEARCH: 711/114, 711/111, 711/112, 714/5, 714/6, 714/7, 710/11, 710/62, 710/65, 710/74, 710/38, 710/315, 710/316

## PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

Search Selected

Search ALL

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PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> 5077736	December 1991	Dunphy, Jr. et al.	714/7
<input type="checkbox"/> 5274645	December 1993	Idleman et al.	714/6
<input type="checkbox"/> 5471586	November 1995	Sefidvash et al.	710/104
<input type="checkbox"/> 5699533	December 1997	Sakai	710/316
<input type="checkbox"/> 5729763	March 1998	Leshem	710/38

<input type="checkbox"/>	<u>5768551</u>	June 1998	Bleiweiss et al.	710/316
<input type="checkbox"/>	<u>5867640</u>	February 1999	Aguilar et al.	714/6
<input type="checkbox"/>	<u>6148414</u>	November 2000	Brown et al.	714/9
<input type="checkbox"/>	<u>6185203</u>	February 2001	Berman	370/351
<input type="checkbox"/>	<u>6247077</u>	June 2001	Muller et al.	710/74
<input type="checkbox"/>	<u>6324181</u>	November 2001	Wong et al.	370/403

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
10171746	June 1998	JP	

ART-UNIT: 2187

PRIMARY-EXAMINER: Portka; Gary J.

ATTY-AGENT-FIRM: Antonelli, Terry, Stout &amp; Kraus, LLP

## ABSTRACT:

A protocol controller disposed between switches in a fiber channel fabric switch circuit and disk drive units for converting a protocol to enable one-to-one connectivity established between controllers and disk drive units.

35 Claims, 7 Drawing figures



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L1: Entry 8 of 8

File: USPT

Jul 25, 1995

DOCUMENT-IDENTIFIER: US 5436893 A

TITLE: ATM cell switch suitable for multicast switching

---

Brief Summary Text (5):

An ATM switch comprises, in general terms, a plurality of link controllers each connected via an input port and an output port to a switch fabric which switches data cells from any input port to any output port. Each link controller has a plurality of data links connected to it. The link controllers comprise input controllers or receivers, whose principal function is simply to receive the bit stream from the external link and to divide it up into cells for presentation to the cell fabric, and output controllers or transmitters, which serve to convert the separate cells from the switch fabric into a continuous bit stream again for forwarding on the appropriate external link.

First Hit   Fwd Refs  
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L1: Entry 8 of 8

File: USPT

Jul 25, 1995

US-PAT-NO: 5436893

DOCUMENT-IDENTIFIER: US 5436893 A

TITLE: ATM cell switch suitable for multicast switching

DATE-ISSUED: July 25, 1995

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barnett; Richard	Chelmsford			GB

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Netcom Limited	Essex			GB	03

APPL-NO: 08/ 147939   [PALM]

DATE FILED: November 5, 1993

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
GB	9225480	December 5, 1992

INT-CL: [06] H04 L 12/18, H04 L 12/56

US-CL-ISSUED: 370/60.1; 370/94.2

US-CL-CURRENT: 370/392; 370/395.3

FIELD-OF-SEARCH: 370/60, 370/60.1, 370/62, 370/94.1, 370/94.2, 370/94.3, 370/110.1

PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

**Search Selected**   **Search ALL**   **Clear**

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>4813038</u>	March 1989	Lee	370/60
<input type="checkbox"/>	<u>4947388</u>	August 1990	Kuwahara et al.	370/94.1
<input type="checkbox"/>	<u>5202885</u>	April 1993	Schrodi et al.	370/60
<input type="checkbox"/>	<u>5229991</u>	July 1993	Turner	370/60

ART-UNIT: 263

PRIMARY-EXAMINER: Kizou; Hassan

ATTY-AGENT-FIRM: Gordon; David P.

ABSTRACT:

An ATM cell switch suitable for multicast switching comprises an input stage arranged to detect a multicast cell and to add to the cell header a switch header identifying the outputs to which copies are to be sent, a switch fabric arranged to identify multicast cells, to make identical copies thereof and to route the copies according to the switch header, and an output stage arranged to make further copies according to the data links which are to receive the multicast and to assign the appropriate VPI/VCID to the cell header of each copy according to data stored in said stage.

11 Claims, 4 Drawing figures

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### Search Results -

Terms	Documents
L5 and (disk adj2 controller)	2

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DATE: Wednesday, June 23, 2004   [Printable Copy](#)   [Create Case](#)

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*DB=USPT,USOC; PLUR=YES; OP=OR*

L6 L5 and (disk adj2 controller)

L5 (bypass adj1 (line or bus)) near10 controller near10 switch

L4 11 and L3

L3 710/316,317,105,315;711/114;379/219;370/395.1,466,352,419,218,400,467,422,395.72,362.ccls.

*DB=EPAB,JPAB,DWPL,TDBD; PLUR=YES; OP=OR*

L2 L1

*DB=USPT,USOC; PLUR=YES; OP=OR*

L1 (fabric adj1 switch) same controller same (external or remote or outside)

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Search:

L6

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### Search History

DATE: Wednesday, June 23, 2004   [Printable Copy](#)   [Create Case](#)

SetName Query

side by  
side

*DB=USPT,USOC; PLUR=YES; OP=OR*

L6 L5 and (disk adj2 controller)

L5 (bypass adj1 (line or bus)) near10 controller near10 switch

L4 11 and L3

L3 710/316,317,105,315;711/114;379/219;370/395.1,466,352,419,218,400,467,422,395.72,362.ccls.

*DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR*

L2 L1

*DB=USPT,USOC; PLUR=YES; OP=OR*

L1 (fabric adj1 switch) same controller same (external or remote or outside)

END OF SEARCH HISTORY

First Hit   Fwd Refs**End of Result Set**

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L6: Entry 2 of 2

File: USPT

Sep 15, 1992

DOCUMENT-IDENTIFIER: US 5148042 A

TITLE: Small electronic device capable of switching batteries by releasing a battery locking mechanism

Detailed Description Text (19):

The system bus 10 is further connected with an extending RAM 18, a backup RAM 19, a hard disc controller (HDC) 20B, a floppy disc controller (FDC) 20F, a printer controller (PRT-CONT) 21, a Universal Asynchronous Receiver/Transmitter (UART) 22, a keyboard controller (KBC) 23, a display controller (DISP-CONT) 24, and a video RAM (VRAM) 25.

Detailed Description Text (20):

The extending RAM 18 consists of a memory card of 1M-byte or 2M-bytes and is mounted on the computer as occasion demands. The backup RAM 19 has a data save area to realize the resume function, and the backup power source (VBK) is always supplied to the backup RAM 19. The hard disc controller (HDC) 20B drives and controls the hard disc drive unit 20A under the control of the CPU 11, to perform read/write operation with respect to a 3.5 inch magnetic recording medium, and the floppy disc controller 20F drives and controls the floppy disc drive unit 32 or the external floppy disc drive unit 33 as occasion demands, under the control of the CPU 11.

## CLAIMS:

19. A portable computer according to claim 18, wherein the first line has a first bypass line for bypassing the first diode between the first switch and the interconnecting portion, the second line has a second bypass line for bypassing the second diode between the second switch and the interconnecting portion, the first bypass line has a first bypass switch for connecting or disconnecting the first bypass line, the second bypass line has a second bypass switch for connecting or disconnecting the second bypass line, the connection controller turns on one bypass switch corresponding to one line electrically connecting its battery and the voltage converter and turns off the other bypass switch corresponding to the other line electrically disconnecting its battery and the voltage converter when the first and second detectors detect that both of the first and second batteries are respectively locked by the first and second latches, turns off the bypass switch corresponding to the connected bypass line when the first or the second detector detects that the latch corresponding to the connected line is released by the release member, and turns on the bypass switch corresponding to the connected line when the third or the fourth detector detects that the terminal of the battery corresponding to the released latch is removed from the terminal of the battery storing portion corresponding to the removed battery.

First Hit   Fwd Refs  
**End of Result Set**

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L6: Entry 2 of 2

File: USPT

Sep 15, 1992

US-PAT-NO: 5148042

DOCUMENT-IDENTIFIER: US 5148042 A

TITLE: Small electronic device capable of switching batteries by releasing a  
battery locking mechanism

DATE-ISSUED: September 15, 1992

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nakazoe; Masayo	Tokyo			JP

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 07/ 578235   [PALM]

DATE FILED: September 6, 1990

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	1-343064	December 29, 1989

INT-CL: [05] H02J 9/06

US-CL-ISSUED: 307/65; 307/66, 307/86, 307/150

US-CL-CURRENT: 307/60; 307/150, 307/66, 307/86

FIELD-OF-SEARCH: 364/707, 364/708, 371/66, 365/229, 320/2, 320/5, 320/6, 429/9,  
429/96-100, 307/46, 307/48, 307/64, 307/65, 307/66, 307/85-87, 307/150

PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

**Search Selected**   **Search ALL**   **Clear**

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>3767933</u>	October 1973	Bogue et al.	307/48
<input type="checkbox"/> <u>3937937</u>	February 1976	McVey	371/66
<input type="checkbox"/> <u>4155015</u>	May 1979	Nakasone et al.	307/157 X

<input type="checkbox"/> <u>4214172</u>	July 1980	See	307/150
<input type="checkbox"/> <u>4816862</u>	March 1989	Taniguchi et al.	365/229 X
<input type="checkbox"/> <u>4965462</u>	October 1990	Crawford	320/2
<input type="checkbox"/> <u>5028806</u>	July 1991	Stewart et al.	307/66

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
59-52328	March 1984	JP	364/708

ART-UNIT: 214

PRIMARY-EXAMINER: Pellinen; A. D.

ASSISTANT-EXAMINER: Fleming; Fritz M.

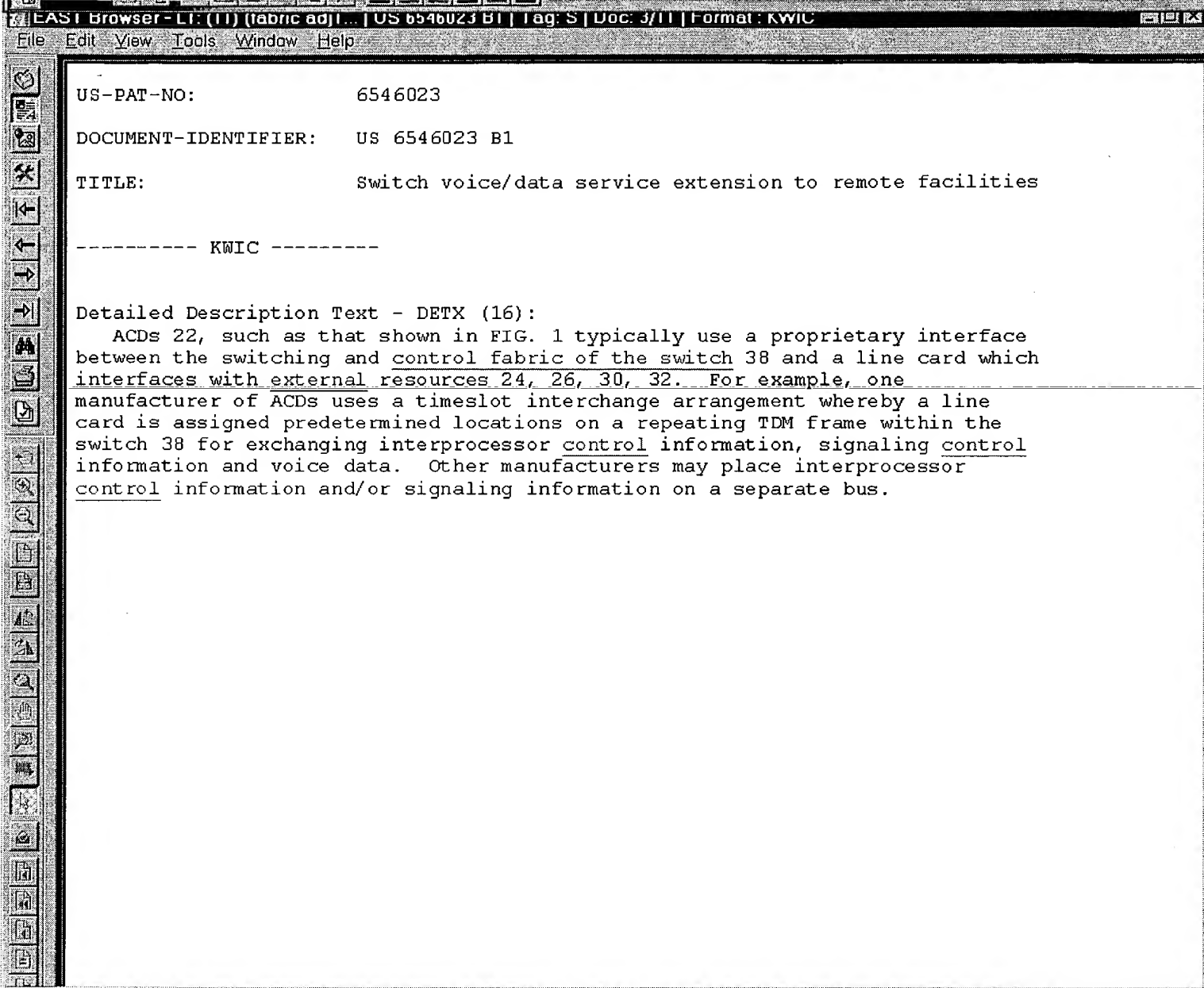
ATTY-AGENT-FIRM: Finnegan, Henderson, Farabow, Garrett and Dunner

## ABSTRACT:

A small electronic device includes first and second locking devices which releasably lock the batteries on a first and second mounting portions, first and second detectors which respectively detect that the locked conditions of first and second locking devices have been released, first and second switches for connecting the first and second batteries to a power supply node. The electronic device also includes a control unit which turns on the first switch to connect the first battery to the power supply node, and switches from an off state to an on state the second switch in response to a detection signal from the first detector.

19 Claims, 8 Drawing figures







US006546023B1

(12) **United States Patent**  
Jones et al.

(10) Patent No.: **US 6,546,023 B1**  
(45) Date of Patent: **Apr. 8, 2003**

(54) **SWITCH VOICE/DATA SERVICE  
EXTENSION TO REMOTE FACILITIES**

(75) Inventors: Barry W. Jones, Hoffman Estates, IL  
(US); Steven T. Delong, Woodridge, IL  
(US); Jerrold S. Zdzanek, Riverside, IL  
(US)

(73) Assignee: Rockwell Electronic Commerce  
Corp., Wood Dale, IL (US)

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/405,585

(22) Filed: Sep. 27, 1999

(51) Int. Cl.<sup>7</sup> H04J 3/16

(52) U.S. Cl. 370/468

(58) Field of Search 370/468, 389-395;  
496/263; 485/455-465; 522/352-355; 231/389-395;  
455/403, 425, 12.1, 554, 456; 348/14.12;  
375/222; 340/825.5; 379/265.11, 93.09-93.29,  
139, 224-229; 265/269, 242, 224-229,  
212, 233-235, 111, 164, 88.25, 88.22

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6,314,176 B1 \* 11/2001 Guraschar 379/219

\* cited by examiner

Primary Examiner—Kwang Bin Yao

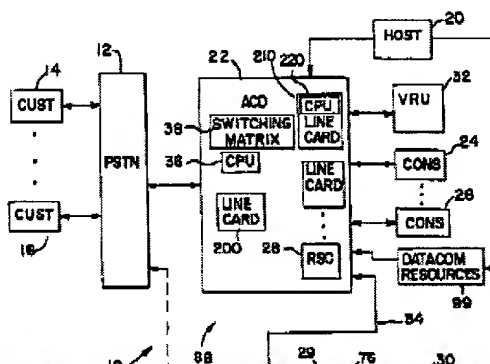
Assistant Examiner—Prenell Jones

(74) Attorney, Agent, or Firm—Welsh & Katz, Ltd.

(57) **ABSTRACT**

A method and apparatus are provided for exchanging control information and voice data between an automatic call distributor and a line card of the automatic call distributor located at a site remote from the automatic call distributor through a wide-bandwidth communication channel. The method includes the step of allocating at least a first portion of the bandwidth of the wide-bandwidth communication channel for the control information and at least a second portion of the bandwidth to voice data. The interprocessor control information is transceived between a controller of the automatic call distributor and a controller of the line card under a packet data format within the first portion of the bandwidth allocated for control information and the voice data is transceived under a dedicated channel format within the second portion of the bandwidth between the automatic call distributor and line card.

42 Claims, 2 Drawing Sheets



US-PAT-NO: 6542954  
DOCUMENT-IDENTIFIER: US 6542954 B1  
TITLE: Disk subsystem

----- KWIC -----

Detailed Description Text - DETX (3):

In the external storage device shown in the figure, N disk array controllers (controller section) 1-1 to 1-N (controllers in middle such as 1-2 are not shown, this applies to hereinbelow) are connected to a host computer (not shown) in an upper side, and provide M disk drive interface (disk drive I/F) controllers 2-1 to 2-M in a bottom side. The hardware configuration of the disk array controller will be described below in greater details. Each of M controllers of fibre channel fabric switch 3-1 to 3-M are respectively connected to the disk drive interface (I/F) controllers 2-1 to 2-M for controlling disk drive units through their fibre channel interface 5. L disk drive units are connected to one fibre channel fabric switch controller, a total of M by L disk drive units (4(1,1) to 4(M,L)) are connected to the fibre channel fabric switch controllers 3-1 to 3-M through fibre channel interfaces 6.



US006542954B1

(12) **United States Patent**  
Aruga

(10) Patent No.: **US 6,542,954 B1**  
(45) Date of Patent: **Apr. 1, 2003**

(54) **DISK SUBSYSTEM**

(75) Inventor: Kazuhisa Aruga, Odawara (JP)

(73) Assignee: Hitachi, Ltd., Tokyo (JP)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: 09/495,868

**FOREIGN PATENT DOCUMENTS**

(22) Filed: Feb. 2, 2000

JP 10171746 6/1998

(30) Foreign Application Priority Data

\* cited by examiner

Feb. 2, 1999 (JP) 11-024648

Primary Examiner—Gary J. Portka

(51) Int. Cl.<sup>7</sup> G06F 13/16; G06F 13/42

(74) Attorney, Agent, or Firm—Antonelli, Terry, Stout & Kraus, LLP

(52) U.S. Cl. 710/316; 710/315; 711/114

(58) Field of Search 711/114, 111, 112;  
714/5, 6, 7; 710/11, 62, 65, 74, 38, 315,  
316

(57) **ABSTRACT**

A protocol controller disposed between switches in a fiber channel fabric switch circuit and disk drive units for converting a protocol to enable one-to-one connectivity established between controllers and disk drive units.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,077,736 A \* 12/1991 Dauphy, Jr. et al. 714/7

35 Claims, 7 Drawing Sheets

